Claims

1. Method for operating a haptic interface unit,
   - wherein at least velocity information data (VID) with respect to at least one haptic device (20) are generated and/or received,
   - wherein based on and in dependence of at least said velocity information data (VID) interaction feedback force data (IFFD) are generated and/or provided being descriptive or representative for an interaction feedback force (IFF) to be generated and/or to be exerted by said at least one haptic device (20), and
   - wherein said interaction feedback force data (IFFD) are transmitted to said at least one haptic device (20) so as to generate and/or exert said interaction feedback force (IFF),

   characterized in that

   an inverted damping operation mode is provided:
   - wherein said interaction feedback force data (IFFD) are at least partly generated to be representative for an interaction feedback force (IFF) which increases with velocity information data (VID) being representative for a decreasing velocity (v), so as to generate and/or exert an interaction feedback force (IFF) which increases with a decreasing velocity (v) and/or
   - wherein said interaction feedback force data (IFFD) are at least partly generated to be representative for an interaction feedback force (IFF) which decreases with velocity information data (VID) being representative for an increasing velocity (v), so as to generate and/or exert an interaction feedback force (IFF), which decreases with an increasing velocity (v),
   - said velocity (v) being a velocity (v) with respect to a respective haptic device (20) or a pointing unit thereof.

2. Method according to claim 1,

   wherein said inverted damping operation mode is performed with respect to vectorial components of said interaction feedback force (IFF) and/or said velocity (v), in particular in an independent manner.

3. Method according to any one of the preceding claims, wherein said interaction feedback force data (IFFD) are generated to describe said interaction feedback force (IFF) as a damping force, so as to generate and/or exert an interaction feedback force (IFF) acting against a given velocity (v) or a vectorial component thereof, in particular in the sense of a counterforce or frictional force.

4. Method according to any one of the preceding claims, wherein the interaction feedback force data (IFFD) are generated to describe said interaction feedback force (IFF) or a vectorial component thereof as having an absolute value f being - at least piecewise - a positive monotonically decreasing function g of the respective velocity (v) or of a vectorial component thereof to fulfill the relation

$$f(v) \propto g(v).$$

5. Method according to claim 4, wherein said at least piecewise positive and monotonically decreasing function g is chosen to fulfill at least piecewise the relation

$$g(v) = \frac{1}{h(v)},$$

where h is at least piecewise a positive and monotonically increasing function of the velocity v or of a vectorial component thereof.

6. Method according to any one of the claims 4 or 5, wherein said at least piecewise positive and monotonically decreasing function g is chosen to fulfill at least piecewise the relation

$$g(v) = \frac{1}{|v|},$$

where v denotes a velocity or vectorial component thereof.

7. Method according to any one of the preceding claims 4 to 6, wherein said at least piecewise positive and monotonically decreasing function g is chosen to be at least piecewise a step function, a staircase function and/or a linear function.

8. Method according to any one of the preceding claims, wherein said interaction feedback force data (IFFD) are generated to describe said interaction feedback force (IFF) as a force which is at least piecewise dependent on a position (x) or a position vector ($\vec{r}$).

9. Method according to claim 8, wherein said position (x) or position vector ($\vec{r}$) are chosen to describe or to be assigned to a position of a respective haptic device (20) or an element, in particular said pointing unit thereof.

10. Method according to any one of the preceding claims 8 or 9, wherein said position (x) or position vector ($\vec{r}$) is chosen to describe or to be assigned to a position of a corresponding abstract pointing means within a data structure, in particular of a graphical user interface (GUI).

11. Method according to any one of the preceding claims, wherein a holding force mode is provided in which the absolute value (f) of the interaction feedback force (IFF) or a vectorial component thereof is increased - in particular in a position dependent form - to a predetermined value (f_{hold}) or above a predetermined force level (f_{max}), if the respective velocity (v) or a vectorial component thereof decreases below a given threshold value (v_{min}).

12. Method according to any one of the preceding claims, wherein the absolute value (f) of the interaction feedback force (IFF) or a vectorial component thereof is decreased to a predetermined value (f_{min}), in particular of zero, or below a predetermined force level (f_{min}), if the respective velocity (v) or a vectorial component thereof increases above a given threshold value (v_{max}).

13. Haptic interface unit,
which is capable of performing or realizing a operating method according to any one of the claims 1 to 12 and/or the steps thereof.

14. Computer program product,
comprising computer program means being adapted to perform and/or realize the method for operating a haptic interface unit according to any one of the claims 1 to 12 and/or the steps thereof, when it is executed on a computer, a digital signal processing means and/or the like.

15. Computer readable storage medium,
comprising a computer program product according to claim 14.